



Internal Technology Partnerships

Janice Buckner

TST Meeting
March 2-3, 2000

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Earth Science Technology Office



ESE/SBIR Subtopics

Instruments for Earth Science Measurements

Topic Manager - Frank Peri

Subtopic	Center	Role	Subtopic Manager
Active Microwave	JPL	Lead	Wendy Edelstein
Active Optical	LaRC	Lead	James Barnes
	GSFC	Participating	Matthew McGill
	MSFC	Participating	Michael Kavaya
Passive Microwave	GSFC	Lead	Charles Cote
Passive Optical	ARC	Lead	Stephen Dunagan
	JPL	Participating	Pantazis Mouroulis
In situ	GSFC	Lead	William Barnes
	ARC	Participating	Warren Gore
Adv Instr Tech for Transitional Boundaries of Land & Water	SSC	Lead	Richard Miller

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ESE/SBIR Subtopics

Platform Technologies for Earth Science Measurements

Topic Manager - Loren Lemmerman

Subtopic	Center	Role	Subtopic Manager
Power	GRC	Lead	Jose Davis
	JPL	Participating	Subbarao Surampudi
	GSFC	Participating	Tom Yi
Thermal	GSFC	Lead	Ted Swanson
Guidance, Navigation & Control	GSFC	Lead	John Deily
Communications	GRC	Lead	Kul Bhasin
	JPL	Participating	Hamid Hemmati
Materials & Structures	LaRC	Lead	Keith Belvin
	LaRC	Participating	Mark Lake
	JPL	Participating	Marie Levine-West
Command & Data Handling	GSFC	Lead	Philip Luers

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ESE/SBIR Subtopics

Advanced Information Systems Technologies

Topic Manager - Joe Coughlan

Subtopic	Center	Role	Subtopic Manager
Knowledge Discovery & Data Fusion	JPL	Lead	Andrea Donnellan
Transmission	GRC	Lead	Bob Bauer
High Performance, Computing & Networking	GSFC	Lead	H. Ramapriyan
Human Machine Interaction	SSC	Lead	Stanley
Automation, Validation & Verification	ARC GSFC	Lead Participating	James Bass H. Ramapriyan
Data Management	GSFC MSFC	Lead Participating	H. Ramapriyan



SBIR Schedule

Activity Name	Start Date	Finish Date	2000											
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct		
Center finalizes write-ups for approved subtopics	1/11/00	2/12/00												
Enterprise final review of subtopics	2/12/00	2/29/00												
Center review of "DRAFT" solicitation	2/24/00	3/8/00												
Final solicitation Approval	3/29/00	4/13/00												
CBD Announcement	3/24/00													
Proposals Due	7/30/00													
Center proposal reviews	7/31/00	9/25/00												
Selections	10/5/00	10/13/00												



1998 SBIR Phase II

GSFC

- **Compact, Solid State, Q-switched Laser Design**
 - Nd: YLF of solid state laser system working towards a 4 or 5% efficiency in converting electrical signals into optical pulses
 - TRL 3
 - This technology will serve as an alternative laser source for space flight applications
- **Low Cost Integrated Submillimeter-wave Receivers**
 - Development of a line of receivers covering the frequency range of 150 GHz to 650 GHz.
 - TRL 4
 - Enables research at sub-millimeter wavelengths
- **Virtual Satellite Platform**
 - Tool to provide flexible spacecraft dynamic simulation
 - TRL 2
 - Allows simulations on the ground, hardware in the loop testing and prototype missions concepts and scenarios.

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- **Quantum Cascade Laser Sensor for Trace Gases - ARC**
 - Compact, lightweight, flight-qualifiable sensor platform, for the detection of formaldehyde (H_2CO) or carbon monoxide (CO) in the troposphere
 - TRL - TBD
 - Potential application include deployment of the prototype spectrometer on planned science missions to provide new measurement capability and provides ground truthing of satellites
- **Efficient Wideband 2 Micron Coherent Lidar - MSFC**
 - Highly efficient wide-bandwidth 2-micron sensitive photodetector that detects signal frequencies in excess of 7 GHz; and a CW 2-micron master oscillator laser that allows platform induced Doppler shifts to be largely reduced prior to detection
 - TRL - 4
 - Expands the range of applications of 2-micron coherent lidar sensors to a broader scan angle range, sensors for wind measurement will be able to obtain better vector measurements, and sensors for both winds and constituents will obtain better spatial coverage.

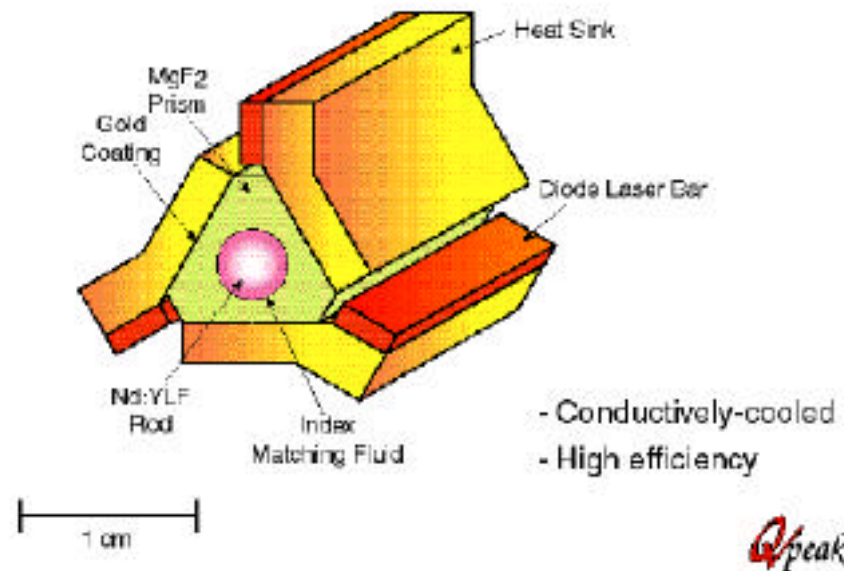


1998 SBIR Phase II

A Highly Efficient Diode-Pumped Laser --- LaRC

- This prism-pumped laser concept will benefit the Earth Sciences Enterprises EX-1 ozone mission which requires the development of a compact, space-based, DIAL instrument for global ozone and aerosol profile measurements.
- In addition, it is highly plausible for the technology being developed under this task to be applied to other ESE lidar missions such as clouds, aerosols, direct wind detection, and water vapor and is compatible for use on UAV platforms.

The Prism-Pumped Laser Concept



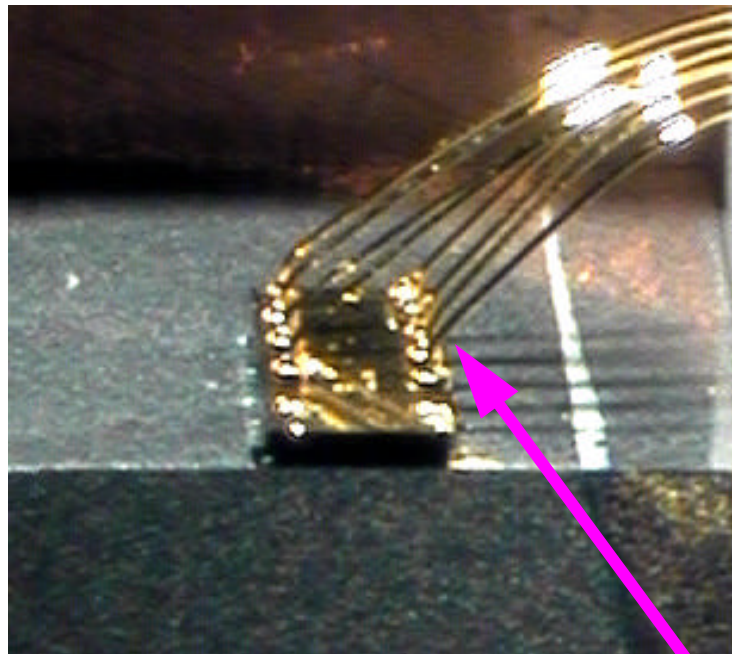
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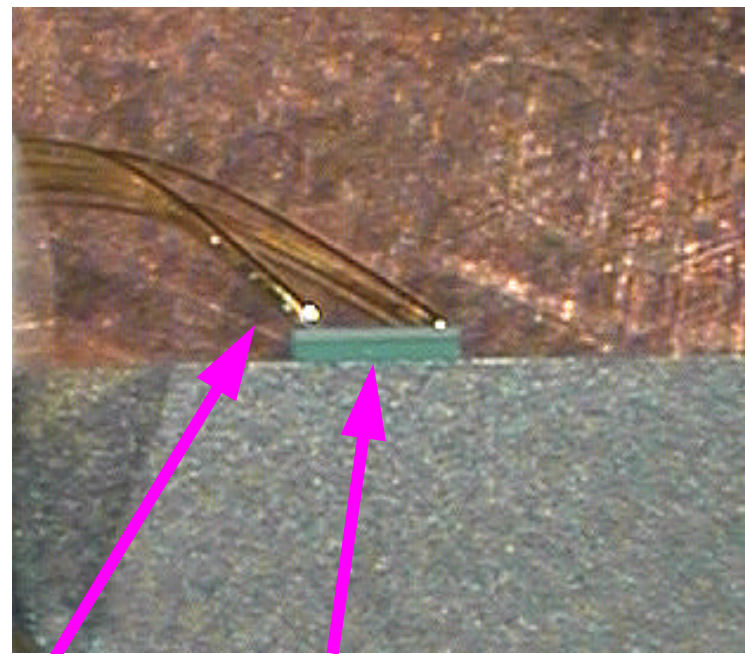
High Temperature, 792 nm Wavelength Single Emitter Diode Laser - LaRC

Front Perspective



diode laser
and submount

Front View



diode laser facet
with optical coating

wire bonds

Accelerated aging tests achieved equivalent to 4×10^9 shots at 60 C



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Back Up Slides

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CETDP NRA Evaluation Process

TECHNICAL MERIT EVALUATION PROCESS

Proposals not in compliance will be returned to the proposer without further review, with a cover letter from the appropriate TAM. Proposals in compliance with the NRA will be carried forward in the process for panel peer review evaluation as described below.

Gathering a list of peer reviewers for mail-in and panel. Send list of selected reviewers and panel chairs to Fred, Steve, and Mel. Fred sends reviewer and panel chair selection to SAIC. Actual panel member distribution involves panel chairs and others.

Reviews and number of reviewers: Ultimate goal is to have each proposal reviewed by at least one mail-in reviewer and two panel reviewers.

Conducting the Panel Evaluation at the Hotel: Each TAM or designate will convene his/her Thrust Area panel, issue instructions, and assign Panel Chairs to their meeting rooms to begin work.

Gauging Quality of Reviews: A look at the writing in the “Specific Strengths” and “Specific Weaknesses” in the evaluation forms will tell. This is the material that will be used to reject or accept, and it must be objective and with sufficient detail to make it defensible. Must also look for objective wording on adequacy of proposed budget and schedule, and on PI/institution capability.



CETDP NRA Evaluation Process cont'd



RELEVANCE RANKING DONE BY THE ENTERPRISES

A semi-final list of those proposal receiving Excellent (E) and Excellent/Very Good (E/VG) and Very Good (VG) ratings in the evaluations go to the enterprises for their own ranking of priority.

PROGRAMMATIC RANKING DONE BY THE TAMs

The semi-final list from the enterprises are integrated to achieve consistency within the CETDP charter. It is conceivable that a VG proposal will be given a higher priority than an E or E/VG proposal at this point; this is the part of the NRA in which the TAMs ensure the NASA enterprise strategic plans are served properly by the NRA.

FINAL SHAPE TO EVALUATIONS

Before writing letters of rejection, the evaluation sheet of each proposal must include defensible language to support the rejection. This will be a minimal problem if the panel work was done well. Any doubts on specific proposals should be revisited by the TAMs in contact with the respective panel chairs, making close reference to panel evaluation.

FINAL PROCESS: "Drawing the line" based on cost and programmatic. Final selection.

LETTERS OF AWARD AND LETTERS OF REJECTION

CONTRACT MANAGEMENT: To be distributed among the NASA Centers.

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